

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently Amended) A discrimination apparatus that detects a counterfeit paper, said discrimination apparatus comprising:

an ultraviolet emission module that irradiates a paper as an object of discrimination with ultraviolet radiation;

a transmitted light measurement module ~~that measures~~ having a plurality of ultraviolet light detection elements each measuring intensity of simultaneously transmitted light of ultraviolet radiation, which is transmitted through the paper;

a fluorescence measurement module having a plurality of fluorescence detection elements each measuring intensity of fluorescence, which is excited from the paper by the ultraviolet radiation; and

a discrimination module that determines the paper as counterfeit or as genuine, based on the ~~observed~~ measured intensity of the simultaneously transmitted light and the measured intensity of the fluorescence;

wherein the ultraviolet light detection elements and the fluorescence detection elements are disposed alternately with each other in a linear arrangement.

~~wherein said transmitted light measurement module includes a plurality of measurement units that measures the intensity of the simultaneously transmitted light of ultraviolet radiation at multiple different positions on the paper; and~~

~~wherein said discrimination module determines the paper as counterfeit or as genuine, based on the measurement results at the multiple different positions;~~

~~a pattern storage unit that stores in advance an allowable range of intensity of simultaneously transmitted light of ultraviolet radiation measured at the multiple different positions to give a criterion of determination of a genuine paper; and~~

~~wherein said discrimination module determines the paper as genuine, when at least a predetermined rate of the observed intensity of the simultaneously transmitted light of ultraviolet radiation at the multiple different positions is included in the allowable range.~~

2. (Cancelled)

3. (Cancelled)

4. (Previously Presented) A discrimination apparatus in accordance with claim 1, said discrimination apparatus further comprising:

a conveyor unit that conveys the paper relative to said ultraviolet emission module and said transmitted light measurement module,

wherein the multiple different positions include a site set in a conveying direction.

5. (Original) A discrimination apparatus in accordance with claim 1, wherein said ultraviolet emission module has multiple ultraviolet-emitting elements, which are located at multiple different positions to irradiate the paper with the ultraviolet radiation.

6. (Original) A discrimination apparatus in accordance with claim 1, wherein said transmitted light measurement module has multiple transmitted light-receiving elements, which are located at multiple different positions to measure the intensity of the transmitted light at the multiple different positions.

7. (Cancelled)

8. (Original) A discrimination apparatus in accordance with claim 1, said discrimination apparatus further comprising:

a conveyor path, along which the paper is conveyed,
wherein said ultraviolet emission module is arranged to face said transmitted light measurement module across the conveyor path.

9. (Original) A discrimination apparatus in accordance with claim 2, said discrimination apparatus further comprising:

a conveyor path, along which the paper is conveyed,
wherein said ultraviolet emission module is arranged to face said transmitted light measurement module and said fluorescence measurement module across the conveyor path.

10. (Original) A discrimination apparatus in accordance with claim 2, said discrimination apparatus further comprising:

a conveyor path, along which the paper is conveyed,

wherein said ultraviolet emission module and said fluorescence measurement module are arranged to face said transmitted light measurement module across the conveyor path.

11. (Original) A discrimination apparatus in accordance with claim 8, said discrimination apparatus further comprising:

a visible radiation block filter that excludes visible radiation from the light emission of said ultraviolet emission module,

wherein said visible radiation block filter is located between said ultraviolet emission module and the conveyor path.

12. (Original) A discrimination apparatus in accordance with claim 9, said discrimination apparatus further comprising:

a visible radiation block filter that is located between said transmitted light measurement module and the conveyor path to exclude visible radiation; and

an ultraviolet radiation block filter that is located between said fluorescence measurement module and the conveyor path to exclude ultraviolet radiation.

13. (Original) A discrimination apparatus in accordance with claim 9, said discrimination apparatus further comprising:

a light reflector that reflects ultraviolet radiation, while allowing transmission of a residual light component,

wherein said light reflector is located between said fluorescence measurement module and the conveyor path to lead reflected light from said light reflector to said transmitted light measurement module.

14. (Original) A discrimination apparatus in accordance with claim 1, said discrimination apparatus further comprising:

a conveyor path, along which the paper is conveyed; and

protective glasses that are respectively located between said ultraviolet emission module and the conveyor path and between said transmitted light measurement module and the conveyor path, said protective glasses being composed of a material that allows transmission of ultraviolet radiation but prohibits excitation of fluorescence by the ultraviolet radiation.

15. (Original) A discrimination apparatus in accordance with claim 1, said discrimination apparatus further comprising:

a conveyor path, along which the paper is conveyed;

a visible radiation block filter that excludes visible radiation from the light emission of said ultraviolet emission module; and

a protective glass composed of a material that allows transmission of ultraviolet radiation but prohibits excitation of fluorescence by the ultraviolet radiation,

wherein said ultraviolet emission module, said visible radiation block filter, and said protective glass are arranged in this sequence relative to the conveyor path, and

a reflection surface covered with a reflective coat for reflecting ultraviolet radiation is formed between said visible radiation block filter and said protective glass.

16. (Currently Amended) A discrimination method that detects a counterfeit paper, said discrimination method comprising:

~~storing in advance an allowable range of intensity of transmitted light of ultraviolet radiation measured at multiple different positions to give a criterion of determination of a genuine paper;~~

an ultraviolet emission step of irradiating a paper as an object of discrimination with ultraviolet radiation;

a transmitted light measurement step of measuring intensity of simultaneously transmitted light of ultraviolet radiation, which is transmitted through the paper, by using a plurality of ultraviolet light detection elements;

a fluorescence measurement step of measuring intensity of fluorescence, which is excited from the paper by the ultraviolet radiation, by using a plurality of fluorescent light detection elements, wherein the ultraviolet light detection elements and the fluorescent detection elements are disposed alternatively with each other in a linear arrangement;

and

a discrimination step of determining the paper as counterfeit or as genuine, based on the observed measured intensity of the simultaneously transmitted light and the measured intensity of the fluorescence, wherein:

~~said transmitted light measurement step comprises measuring the intensity of the simultaneously transmitted light of ultraviolet radiation at multiple different positions on the paper by using a plurality of measuring units, and~~

~~said discrimination step comprises determining the paper as counterfeit or as genuine, based on measurement results at the multiple different positions;~~

~~said discrimination step determines the paper as genuine, when at least a predetermined rate of the observed intensity of the simultaneously transmitted light of ultraviolet radiation at the multiple different positions is included in the allowable range.~~

17. (Cancelled)

18. (New) A discrimination apparatus that detects a counterfeit paper, said discrimination apparatus comprising:

an ultraviolet emission module that irradiates a paper as an object of discrimination with ultraviolet radiation;

a transmitted light measurement module having a plurality of ultraviolet light detection elements each measuring intensity of simultaneously transmitted light of ultraviolet radiation, which is transmitted through the paper;

a fluorescence measurement module having a plurality of fluorescence detection elements each measuring intensity of fluorescence, which is excited from the paper by the ultraviolet radiation; and

a discrimination module that determines the paper as counterfeit or as genuine, based on the measured intensity of the simultaneously transmitted light and the measured intensity of the fluorescence;

wherein the ultraviolet light detection elements are arranged in a first row, the fluorescence detection elements are arranged in a second row, the first row is parallel with the

Application No.: 10/743,699

second row and not co-linear with the second row, and the optical axis of at least one ultraviolet light detection element and the optical axis of at least one fluorescent detection element intersect with each other on the paper.